

hat is claimed is:

1. A circuit arrangement for operating an exhaust-gas probe including a NOx double chamber sensor, said exhaust-gas probe including: a heatable solid-state electrolyte body having first and second pump chambers; diffusion barriers for separating said chambers from each other and from the exhaust gas; a third chamber communicating with the atmosphere; an external pump electrode exposed to the exhaust gas; a first oxygen pump electrode disposed in said first pump chamber; a second oxygen pump electrode disposed in at least one of said first and second pump chambers; a nitrogen oxide pump electrode disposed in said second pump chamber; an air reference electrode disposed in said third chamber; and, said circuit arrangement comprising:

circuit means for applying pregivable voltages to said electrodes, respectively, and for generating, in a controlled manner, the following: a first oxygen pump current between said first oxygen pump electrode and said external pump electrode; a second oxygen pump current between said second oxygen pump electrode and said external pump electrode; and, a nitrogen oxide pump current between said nitrogen oxide pump electrode and said external pump electrode; and,

said circuit means including: only one pump voltage generating circuit unit; switching means for switching said pump voltage generating circuit unit between respective ones of said pump electrodes; and, said pump voltage generating unit functioning to generate, in a controlled manner, all of the voltages applied to said pump electrodes in dependence upon respective reference voltages.

2. The circuit arrangement of claim 1, said pump voltage generating circuit unit including an operational amplifier; said switching means being switchable to connect respective ones of said reference voltages and respective ones of said voltages applied to said pump electrodes to said operational amplifier which compares a corresponding one of said reference voltages to a corresponding one of said voltages applied to said pump electrodes; and, said pump voltage generating circuit unit further including means for minimizing deviations of each of said voltages applied to said pump electrodes from the corresponding one of said reference voltages.

3. The circuit arrangement of claim 2, said minimizing means including a plurality of integrators connected to corresponding ones of three of said pump electrodes; said switching means including ancillary switching means for connecting the output of said operational amplifier sequentially to said integrators which integrate corresponding ones of the fault signals outputted by said operational amplifier; a plurality of current measuring circuits connected downstream of corresponding ones of said integrators with said current measuring circuits measuring the pump currents flowing in respective ones of said pump electrodes and outputting voltage values proportional thereto.

4. The circuit arrangement of claim 1, said switching means being configured in CMOS technology.

5. The circuit arrangement of claim 1, further comprising a clock generator for periodically switching said switching means at a frequency in the kilohertz range.